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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MULLINS, BURTON S

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 11/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/764,766

Applicant(s)

HEINE ET AL.

Examiner

Burton S. Mullins

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 72-78 and 81-90 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 81,83-86 and 88 is/are allowed.
- 6) ☒ Claim(s) 72-78,82,87,89 and 90 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 72, 83, 87 and 89 are objected to because of the following informalities:

In claim 72, line 12, insert a comma after "disc".

In claim 83, line 4, change "mans" to ---means---.

In claim 87, line 2, change "over" to ---on--- and "about" to --in--.

In claim 89, line 2, change "over" to ---in---.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. Claims 73-78, 82, 89 and 90 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 73, "said correction force" lacks antecedent basis. Is this the same force as the "radial force which stabilizes the position of said spin axis" in claim 72?

In claim 78, it is not clear if the "slotless winding" corresponds to the first set of windings of the motor. Further, recitation "said windings of said actuator" is indefinite because, while the motor may have a slotless winding, there is no antecedent basis for an actuator winding. Are both the "slotless winding" and "windings of said actuator" the same winding, i.e., the "first set of windings" of the motor?

In claim 82, recitation "wherein the actuator comprises the first windings" is indefinite and confusing. Claim 81 recites "a motor...comprising a first set of windings." Are the "first

windings" and the "first set of windings" the same windings? Further, how can they belong to both the motor and the actuator?

In claim 89, "winding" should be ---windings---.

Claim 90 depends from itself and is thus indefinite. Presumably, this is a typographical error and claim 90 will be treated as depending from claim 89.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 72-74 and 87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (US 5,396,388) in view of

Brown teaches a disc drive apparatus and rotating system including: a rotor 16 carrying an inertial load comprising at least one disc 24 and bearing 20 means supporting the rotor and disc about a spin axis (Fig.2); a motor 14 to cause rotation of the rotor about the spin axis (Fig.2) comprising: a first set of windings (motor stator coils 14a); a magnet 14b supported radially adjacent the windings (Fig.2); and a source of DC drive current (not shown) for causing relative rotation between the windings 14a and rotor magnets 14b (c.8, lines 7-11).

Brown does not teach an "actuator" combined with the motor and comprising a source of current energizing the windings to generate a radial force that stabilizes the position of the spin axis and dampens movement of the rotor disc, and probes associated with the rotor to measure the gyroscopic motion of the rotor, with at least one output of the probes processed to establish a signal applied to energize said windings and stabilize the system.

Fukao teaches an electromagnetic machine with a system (Fig.9) designed to prevent high-speed, elastic, shaft vibrations (c.1, lines 20-21) including stator windings C2 and C4 which generate radial and rotating magnetic forces, respectively, on the rotor 50 (Fig.1, c.6, lines 42-29; see also Fig.8 and c.2, line 42-c.3, line 18). Fukao's disclosed "actuator" comprises positional control circuitry "B" combined with motor 10 to generate currents i_α and i_β and radial forces on position (radial control) windings C2 which stabilize the position of the spin axis and dampen movement of the rotor 50 (c.4, lines 3-6), and further includes probes 58a/58b associated with the rotor 50 to measure the gyroscopic motion (position) of the rotor, with at least one output of the probes processed via lines α/β to establish the above current signals applied to energize said position windings and stabilize the system (c.3, line 65-c.4, line 20). The actuator and control allows the shaft to be short and the speed high (c.1, lines 29-33).

It would have been obvious to one having ordinary skill in the art to modify Brown's motor and provide an actuator/controller per Fukao since the actuator would have been desirable to reduce elastic vibrations in the machine shaft, thus increasing rotor speed.

Regarding claims 73-74, the radial "correction" force in Fukao may vary in direction and magnitude to "stablize" the system (Fig.8, c.3, lines 1-13; c.10, lines 64-67). The force would thus be adjusted relative to the reference direction of the probes 58a/58b.

Regarding claim 87, in Fukao, Fig.8, each winding is wound in a separate slot.

Allowable Subject Matter

5. Claims 75-78 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Regarding claims 75, the prior art of record, in particular the combination of Brown and Fukao, does not teach the claimed comb filter responsive to the output of the probe to separate synchronous from non-synchronous components. Regarding claim 78, the windings of the actuator in Fukao are not disclosed as being concentric and placed in the same airgap between the core and rotating magnets.

6. Claims 81, 83-86 and 88 are allowed. Regarding claim 81, the prior art of record, in particular the combination of Brown and Fukao, does not teach the claimed comb filter separating non-repeating from repeating movements of the rotor.

7. Claims 82, 89 and 90 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments with respect to claims 72-90 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Any inquiry concerning this communication or earlier communications from the

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examiner should be directed to Burton S. Mullins whose telephone number is 305-7063. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 305-1341 for regular communications and 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.



Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
November 14, 2002